

REMARKS

The Final Office Action of July 1, 2005, and the Advisory Action dated September 20, 2005, have been received and reviewed.

Claims 1-23 are currently pending and under consideration in the above-referenced application. Of these, claims 1-12 and 14-23 stand rejected, while claim 13 has been objected to for being dependent from a rejected base claim.

Reconsideration of the above-referenced application is respectfully requested.

Rejections Under 35 U.S.C. § 103(a)

Claims 1-12 and 14-23 have been rejected under 35 U.S.C. § 103(a).

The standard for establishing and maintaining a rejection under 35 U.S.C. § 103(a) is set forth in M.P.E.P. § 706.02(j), which provides:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicants disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Klun in View of Zimmer

Claims 1-12 are rejected under 35 U.S.C. § 103(a) for reciting subject matter which is assertedly unpatentable over the subject matter taught in U.S. Patent 5,667,541 to Klun, et al., (hereinafter "Klun"), in view of the teachings of U.S. Patent 6,054,183 to Zimmer, et al. (hereinafter "Zimmer").

Independent claim 1 recites a method for fabricating an apparatus for conditioning a polishing pad that comprises, among others, providing a quantity of an abrasive material that is degradable or dissolvable by at least one chemical that does not substantially degrade or dissolve a material of a polishing pad to be conditioned by the apparatus.

Klun teaches a process for manufacturing abrasive particles and objects using such particles. FIGs. 1 and 2. Klun lists a large number of materials from which the abrasive articles may be formed. *See, e.g.*, col. 18, lines 51-63. Quartzite is one of the listed materials. *See*, col. 18, line 54. The abrasive articles, in conjunction with a polymerizable composition and a photoinitiator system, may be used to form a coatable composition that may be used to form abrasive articles. Col. 2, lines 40-45.

Zimmer teaches a conditioning pad for Chemical-Mechanical Polishers (CMP) that comprises a substrate, diamond grit distributed evenly over the surface of the substrate, and a thin film of CVD diamond grown onto the diamond grit and substrate. FIG. 1; Col. 3, lines 60-67.

Neither Klun nor Zimmer teaches or suggests a method for fabricating polishing pad conditioning apparatus that includes the act of “providing a quantity of an abrasive material that is degradable or dissolvable by at least one chemical that does not substantially degrade or dissolve a material of a polishing pad to be conditioned with the apparatus.”

Despite this fact, it was noted in the comments that accompanied the Advisory Action of September 20, 2005, that quartzite is the same as quartz, a material that is listed in the specification of the above-referenced application as a material that is “degradable or dissolvable by at least one chemical that does not substantially degrade or dissolve a material of [a] polishing pad.” Advisory Action, page 2.

This reliance upon the specification of the above-referenced application to identify an abrasive material that is disclosed in Klun, one of the references upon which the Office has based its rejection, and could be used in a polishing pad conditioning apparatus of the type disclosed in Zimmer, the other of the references upon which the Office relies, is a clear example of improper hindsight reconstruction to establish a combination of reference teachings that would read on each and every element of a claim, in this case independent claim 1 and claims 2-12 depending therefrom.

It is respectfully submitted that, at the date to which a claim for priority has been made in the above-referenced application, one of ordinary skill in the art would not have been motivated by the teachings of Klun, the teachings of Zimmer, or the knowledge that was generally available

in the art at that time to develop a method for fabricating polishing pad conditioning apparatus that includes providing abrasive material that may be degraded or dissolved by at least one chemical that will not substantially degrade or dissolve a material of a polishing pad with which the conditioning apparatus is to be used. As one of ordinary skill in the art did not have the benefit of such hindsight, one of ordinary skill in the art would not have been motivated to combine teachings from Klun with teachings from Zimmer in the manner that has been asserted.

Therefore, a *prima facie* case of obviousness has not been established against any of claims 1-12.

Furthermore, claim 6 is allowable because neither Klun nor Zimmer teaches or suggests a method that includes at least partially *impregnating* a supporting substrate with abrasive particles. Klun discloses a slurry of abrasive particles *coated on a surface* of a backing. Col. 12, lines 51-67; Col. 13, lines 1-6. Zimmer teaches a uniform distribution of diamond particles applied *over* a substrate, with a subsequent layer of CVD diamond grown *onto* the exposed substrate. Col. 4, lines 23-26; Col. 5, lines 49-51. Neither of these references teaches or suggests a method that includes at least partially impregnating the supporting substrate with abrasive particles.

Claim 8 is additionally allowable because neither Klun nor Zimmer teaches or suggests a method of completely *embedding* at least some of the abrasive particles *within* the supporting substrate. As discussed above, the teachings of both Klun and Zimmer are limited to disposing abrasive particles upon a backing and upon a substrate, respectively. Neither reference teaches or suggests *embedding* abrasive particles within a supporting substrate.

Claim 10 is additionally allowable because Klun and Zimmer fail to teach or suggest forming a supporting substrate from the quantity of abrasive material. As discussed above, Klun teaches disposing a slurry *upon* a separate backing, while Zimmer teaches disposing abrasive diamonds *upon* a substrate. Neither reference teaches or suggests *forming a supporting substrate* from the quantity of abrasive material.

Withdrawal of the 35 U.S.C. §103(a) rejections of claims 1-12 is respectfully requested.

Klun, in View of Zimmer and Bange

Claims 14-23 stand rejected under 35 U.S.C. § 103(a) for reciting subject matter which is assertedly unpatentable over Klun, in view of teachings from Zimmer and, further, in view of the teachings of U.S. Patent 6,352,471 to Bange, et al. (hereinafter “Bange”).

The teachings of Klun and Zimmer are set forth above.

Bange teaches an abrasive filament, which may be combined with optional additives. Col. 17, lines 20-21. Included among the optional additives are grinding aids that either (1) decrease friction; (2) prevent the abrasives from capping; (3) decrease temperature between the abrasives and the workpiece; or (4) decrease grinding forces. The grinding aids increase the useful life of the abrasive material and may consist of various metals, such as tin and lead. Col. 17, lines 43-67; col. 18, lines 1-3. The abrasive filaments of Bange may be formed around a preformed *core* of twisted wires. FIGs. 5-7; col. 9, lines 1-25. The preformed core may be one of several metals. Col. 9 lines 65 – 67; Col. 10, lines 1–3.

As set forth above, independent claim 1 is allowable. Therefore, claims 14-23, which depend directly or indirectly from independent claim 1, are also allowable.

Claims 14-23 are further allowable since the teachings of Bange do not remedy the aforementioned deficiencies of Klun and Zimmer with respect to having not provided one of ordinary skill in the art with some motivation to combine their teachings before the priority date of the above-referenced application.

Claim 14 is additionally allowable because none of Klun, Zimmer, or Bange teaches or suggests a method that includes providing a quantity of abrasive material comprising at least one silicon dioxide, iron, an iron alloy, copper, nickel, and tungsten. Although such materials are mentioned in Bange, Bange refers to these materials only in configurations where they are useful as “grinding aids,” not as abrasive materials. The text preceding these lines makes clear that these materials are used to (1) decrease friction; (2) prevent the abrasives from capping; (3) decrease temperature between the abrasives and the workpiece; and (4) decrease grinding forces. Col. 17, lines 43-67; col. 18, lines 1-3.

Claim 18 is additionally because Klun, Zimmer, and Bange all lack any teaching or suggestion of a method of securing at least one curled or twisted filament to a supporting substrate. Bange discloses an abrasive material formed over a preformed core, which may consist of a metal strand or strands that are twisted. FIGs. 5-7; col. 9, lines 1-25; col. 9 lines 65-67; col. 10, lines 1-3. Bange does not teach or suggest twisting or curling the abrasive material itself and securing it to a supporting substrate.

Allowable Subject Matter

The indication that claim 13 recites allowable subject matter is gratefully acknowledged. This claim has not been amended to independent form, as the claims from which it depends are believed to be allowable.

CONCLUSION

It is respectfully submitted that each of claims 1-23 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,



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